Al-Ahliyya Amman University Bachelor Degree

Faculty of Arts and Sciences

Allied Sciences Department

Course Syllabus Mathematics 1

(A0111101)

Semester: Second
Academic year 2024/2025

This Course Syllabus is to be kept in the course file for this course. All changes, update and/or modifications should be reflected on the form.

1. Course & Instructor Information:

Course Information	
Course Name	Mathematics 1
Course Number	A0111101
Credit Hours	3
Course Nature	√ Theoretical ☐ Practical
Course Type	☐ Face to Face √ Blended ☐ Full Online
Prerequisites	None
Concurrent	None

Course Description & Objectives	
Course Description	Topics include Function and Models, Trigonometry Functions, Logarithms; Exponential functions, Limits of Sequences, Continuity, Limits of functions, Derivatives and Rates of Change, Basic Differentiation Formulas, Derivatives of the Logarithmic functions, Linear Approximations, Applications of differentiation, Maximum and minimum values, How derivatives affect the shape of a graph, L'Hospital's Rule, Optimization Problems, Integrals, The indefinite integral, definite integral and applications, The fundamental theorem of calculus, The substitution rule
Course Objectives	The purpose of this course is to show students how calculus relates to science in general, and provide you with a sound knowledge of mathematics and an understanding of the importance of mathematical arguments. Equally important, you will also come away with a clear understanding of how these mathematical concepts and techniques are central in the life sciences. The text motivates and illustrates the topics of calculus with examples drawn from many areas of science.

Educational Sources	
Required Text(s)	"Calculus Early Transcendental". James Stewart, 8th edition, Thomson, Metric International Version, 2015.
Supportive References	1. Calculus, 9th Edition, Anton-Bivens-Davis, John Wiley & Sons Inc, 2010, ISBN (978-0-470-39874-6). 2. Calculus and its Applications, 11th edition, Goldstein, Pearson Education,2007,ISBN (0-13-229313-7). 3. Calculus , 9th Edition / Anton-Bivens-Davis / John Wiley & Sons Inc 4. Calculus and its Applications, 11th edition, Goldstein, Pearson Education,2007,ISBN (0-13-

	229313-7). 5. Single variable calculus by Stewart, James , 2009 6. Calculus by Thomas- Finney 9th edition , 1996. 7. Calculus by Richard Silverman , 1997.

Instructor's Information			
Instructor's Name	Mr Rami Alkhateeb		
E-mail	r.alkhaeeb@ammanu.edu.jo		
Office Number	6002	**Telephone Ext.**	----
Office Hours	Sun/Mon/Tus:11:00-12:00	Mon/Wed 12:00-13:30	

Course Place & Time			
Lecture Days	Sunday /Mon/Thu	**Lecture Time**	9:00 – 10:00
Hall place	6104		

2. Learning Outcomes for the Academic Program:

There is no Math program yet. But the most common PLO in all programs can be as follows:

PLO#	Program Learning Outcomes (PLOs)
1	Master skills in scientific, logical, critical and creative thinking and utilize such skills in professional and personal life.

3. Matrix of Correlation of the Learning Outcomes of the Program with the Learning Outcomes of the Course:

PLO #	CLO #	Course Learning Outcomes CLOs	Level Descriptions		
			Knowledge	Skills	Competencies
1	1	**Interpret** the meaning of various functions and corresponding domains, ranges and graphs.	√		
1	2	**Find** the limit of functions and **determine** continuity of functions.		√	
1	3	**Use** differentiation rules to differentiate algebraic and transcendental functions.		√	
1	4	**Draw** graphs of algebraic and transcendental functions considering limits, continuity and differentiability at a point.		√	
1	5	**Identify** appropriate calculus concepts and techniques to provide	√		√

		mathematical models of real-world situations and **determine** solutions to applied problems.			
1	**6**	**Evaluate** definite integrals using the fundamental theorem of calculus		√	
1	**7**	**Articulate** the relationship between derivatives and integrals using the fundamental theorem of calculus.	√	√	

4. Course Units & Time Table:

Week	Topic	Due Date of Assignments/ Exams	Course Units in the Textbook	CLO
1+2 (face to face : online is 2:1)	**Unit 0 : Review of Basic Concepts** - Intervals, Inequalities, and Absolute Values, - Coordinate Geometry, Graphs of second degree equations, - Trigonometry		**Ch 0**	1
3+4 (face to face : online is 2:1)	**Unit 1 : Functions and Sequences** - Four ways to represent a function - A catalogue of essential functions - New functions from old functions - Exponential functions - Logarithms. - Inverse functions and logarithms		**Ch 1**	1,2
5+6 (face to face : online is 2:1)	**Unit 2**: **Limits** - Limits of Functions at Infinity - Limits of Functions at Finite Numbers - Continuity	Assignment 1 parts 1,2,3 During Week 1 to 6	**Ch 2**	1,2, 4
7+8+9 (face to face : online is 2:1)	**Unit 3: Derivatives** - The Derivative as a Function - Basic Differentiation Formulas - The Product and Quotient Rules - The Chain Rule - Derivatives of the Logarithmic functions - Linear Approximations	Midterm Exam	**Ch 3**	3,4, 5
10+11+12 (face to face : online is 2:1)	**Unit 4: Applications of differentiation** - Maximum and minimum values - How derivatives affect the shape of a graph - L'Hospital's Rule: Comparing Rates of Growth - Optimization Problems		**Ch 4**	3,4, 5
13+14 (face to face : online is 2:1)	**Unit 5: Integrals** - The definite integral - The fundamental theorem of calculus - The substitution rule	Assignment 2 Parts 1,2,3 During to	**Ch 5**	6,7

		Week 8 to 14		

5. Course Teaching Methods:

The Method of Instruction May Include, But are Not Limited to:
Lectures
Discussion & Problem Solving
Course Tasks, Individual Assignment
Workshops or Symposia, Softwares.

6. Methods of Assessment:

#	Assessment Method	Weight %	Description
A	2 Tests	70%	- Multiple choice questions - True/False - Short answers - Essay Questions - Problem solving - Writing programs
B	2 Assignments	10%	- Problem solving and conceptual questions
C	2 Quizzes	10%	- Multiple choices questions - True /False - Short answers - Problem solving
D	Class participation	10%	- Student participation - Attendance - Course portfolio
	Total	**100%**	

7. Relationship Between the Assessment Methods and the Course Learning Outcomes (CLOs):

Assessment Method	Course Learning Outcome CLOs						
	CLO 1	**CLO 2**	**CLO 3**	**CLO 4**	**CLO 5**	**CLO 6**	**CLO 7**
Quizzes	√	√	√			√	
Assignments	√	√	√	√	√	√	√
Midterm Exam	√	√	√	√			
Final Exam	√	√	√	√	√	√	√
Participation			√		√		

8. Regulations of the University (It shall be Explained to the Students in the First Meeting):

1. Attendance	• **Students must attend all classes of this course.** • **Any student with absence of 15% of the classes of any course, will be illegible to sit for the final exam and will be given the university zero (35%) in this course.** • **In the case above-mentioned case, if a student submits an official sick report authenticated by university clinic or an accepted excuse by the Dean of his/her faculty, the student will be considered as withdrawn from the course, and a "W" will be shown in the transcript for this course.**
2. Turning up late for a lecture	**Students are not allowed to come late to classes. Any student coming late will not be allowed to attend the class and he/she will be marked absent.**
3. Exams	• **Failure in attending a course exam other than the final exam, will result in zero mark unless the student provides an official acceptable excuse to the instructor who approves a make up exam.** • **Failure in attending the final exam will result in zero mark unless the student presents an official acceptable excuse to the Dean of his/her faculty who approves an incomplete exam, normally scheduled to be conducted during the first two weeks of the successive semester.**
4. Assignments & projects	**Assignments and projects should be submitted to the instructor on the due date. Zero mark will be given for late submissions unless the student has an acceptable excuse approved by the instructor of the course.**
5. Exam Attendance/ Punctuality:	• **A student who is late more than 10 minutes will not be permitted to sit the exam (first, second or mid exams).** • **A student who is late more than 30 minutes will not be permitted to sit to final exam, and no student will be permitted to leave the exam**

	center before the elapse of 30 minutes.
6. Cheating	**Cheating is an attempt to gain marks dishonestly and includes; but not limited to:** • **Copying from another student's work.** • **Using materials not authorized by the institute.** • **Collaborating with another student during a test, without permission.** • **Knowingly using, buying, selling, or stealing the contents of a test.**

	• **Plagiarism which means presenting another person's work or ideas as one's own, without attribution.** • **Using any media (including mobiles) during the exam.**
7. Penalty of Cheating	**The minimum penalty for cheating is an automatic Zero for the test or assignment leading to a possible "F" for the course. The exam invigilator will produce a report on the case to the examination committee chairman. The report will be kept in the student file. The student may remain seated in the exam center, but in case that causes a disturbance to other students, the student will be expelled out of the exam center if approved by the examination committee chairman. A second offense will result in the immediate suspension of the student for the remainder of the current semester. A copy of the decision will be kept in the student file.**
8. Using the mobile phone	**Mobile phones should be kept turned off or silent while in class. Usage of mobile phones is not allowed in classes in any form (talking and/or texting).**